

ular cranial nerve decompressed. In cases of trigeminal neuralgia, an initial success rate of up to 97% and a long-term rate of 80% can be anticipated. Both hemifacial spasm and glossopharyngeal neuralgia are eliminated in about 80% of patients after microvascular decompression of the respective cranial nerves. These procedures have been carried out now for more than a decade and long-term follow-up indicates these impressive results have persisted.

Clinical and laboratory research efforts have neither yielded the mechanism of these cranial neuropathies, nor have they precisely determined what role the microvascular cross-compression plays. Further questions remain as to why certain nerves seem prone to the development of a clinical syndrome, while others are minimally so. Future investigative efforts may clarify whether other disorders stem from vascular compression of neural structures in the posterior fossa. Nevertheless, microvascular decompression offers an important method of treatment in a growing number of cranial nerve syndromes.

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Magnetic Resonance Imaging

OVER THE PAST TWO YEARS, in a dramatic technologic advancement, magnetic resonance (MR) imaging has assumed an important role in neurodiagnosis. Although computed tomographic (CT) scanning is still the better technique for assessing most acute cranial or spinal disorders involving hemorrhage or trauma, MR imaging has proved capable of visualizing a variety of central nervous system lesions that in some instances cannot be seen on CT. Remarkable images of such lesions, including multiple brain lesions seen at times in multiple sclerosis, the acquired immunodeficiency syndrome, brain abscesses and metastatic tumors, have been obtained.

Because MR imaging is extremely sensitive to changes in the brain water content, lesions associated with brain edema—the gliomas, meningiomas and intracerebral hema-

tomas, among others—are readily visualized. Bone does not show up well on MR images, and so this technique is particularly valuable in assessing posterior fossa lesions, such as brain-stem gliomas, acoustic nerve sheath tumors and infarction—conditions for which CT is at a disadvantage because of bone artifact or because many of these lesions are nearly isodense with brain on CT. Conversely, MR imaging is not as consistently useful as CT scanning in evaluating bone abnormalities unless the bone lesion is caused by tumor involvement.

MR imaging has rapidly been accepted as the superior diagnostic test for many spinal cord and spinal canal abnormalities. Cord or dural sac compression is seen readily on MR images. Nerve root compression by a herniated intervertebral disc, though, may still be best evaluated by CT or myelography. Spinal cord tumors and syrinxes can be defined well on MR images, whereas they may not be seen at all on other studies. With conventional or CT myelography, their presence often can only be inferred by cord widening. Conventional myelography soon may be used only rarely, in view of the minute detail displayed by MR imaging and the improvement in CT spine images that has been obtained.

Because MR imaging is generally more sensitive than CT in detailing brain and spinal cord lesions, it is in many cases, wherever available, the procedure of choice for an initial diagnostic study. The exceptions are patients with acute trauma, stroke or suspected intracranial hemorrhage, in which cases CT scanning without contrast is indicated. Caution is necessary in scanning patients who may have metallic implants. The cost of CT scans and MR imaging of the spine and brain is comparable. Recognizing the value of MR imaging, the State of California's Medicaid program (Medi-Cal) now provides reimbursement for MR imaging done to evaluate brain and spinal cord pathology. The safety, efficacy and sensitivity of MR imaging have established its position as a critical diagnostic tool for neurologic disease.

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